

Claims

1. A self-crosslinking aqueous polyurethane dispersion containing a crosslinking agent **I** selected from diamines **I1** and dihydrazides **I2** and polyurethanes with structural units derived from polyisocyanates **A**, polyols **B** having a number-average molar mass M_n of at least 400 g/mol, compounds **D** having at least two groups which are reactive towards isocyanates and at least one group which is capable of anion formation, low molar mass polyols **E** carrying no further groups which are reactive towards isocyanate groups, compounds **F** containing at least one group which is reactive towards isocyanate and at least one aldehyde-like or ketone-like carbonyl group, compounds **G** which are monofunctional with respect to isocyanates or contain active hydrogen of differing reactivity and which differ from compounds **E**.
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2. The self-crosslinking aqueous polyurethane dispersion of claim 1, characterised in that the polyurethanes additionally contain structural units derived from low molar mass polyols **C** having a M_n of less than 400 g/mol.
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3. The self-crosslinking aqueous polyurethane dispersion of claim 1, characterised in that the polyurethanes additionally contain structural units derived from compounds **H**, which differ from **B**, **C**, **D**, **E**, **F** and **G** and contain at least two groups which react with NCO groups.
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4. The self-crosslinking aqueous polyurethane dispersion of claim 1, characterised in that the carbonyl groups incorporated into compound **F** are bound to the polymer chain in the polyurethane by means of a group $-X-$, wherein the group $-X-$ is selected from the group consisting of linear or branched or cyclic alkylene groups or aralkylene groups having at least 2 carbon atoms, and wherein the two binding sites are not on the same C atom.
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5. The self-crosslinking aqueous polyurethane dispersion of claim 1, characterised in that the compounds **F** are
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selected from the group consisting of 1-(4-hydroxyphenyl)-3-butanone, 3-acetyl-1-propanol, 2-acetyl-1-ethanol, 4-acetyl-1-butanol, 2,2-dimethyl-3-hydroxypropionaldehyde and dihydro-5-hydroxymethyl-2(3H)-furanone.

5 6. The self-crosslinking aqueous polyurethane dispersion of claim 1, characterised in that dihydrazides of aliphatic dicarboxylic acids are used as crosslinking agents.

7. A process for preparing self-crosslinking aqueous polyurethane dispersions according to claim 1, characterised in that a polyurethane prepolymer, containing on average at least 1.7 free isocyanate groups per molecule, is first prepared from polyisocyanates **A**, polyols according to **B**, compounds **F** and optionally the low molar mass polyols **C** and compounds **D**, this prepolymer is then reacted with compounds **E** and/or **G**, optionally mixed with small amounts of compounds **H**, in a non-aqueous system, wherein component **E** is used in an amount such that the number of hydroxyl groups in **E** is greater than the number of isocyanate groups in the prepolymer prepared in the first step, and the fully reacted polyurethane resin is then neutralised and converted to the aqueous system.

8. The process of claim 7, characterised in that a polyurethane prepolymer having a Staudinger Index of at least 11 cm³/g is prepared in the first step.

25 9. Aqueous self-crosslinking coating compounds containing the self-crosslinking aqueous polyurethane dispersions of claim 1.

30 10. The aqueous self-crosslinking coating compounds of claim 9, characterised in that they additionally contain curing agents selected from blocked isocyanates and amino resins.